



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,184	09/10/2003	Yadong Li	138543	7486
7590 Dean D. Small Armstrong Teasdale LLP Suite 2600 One Metropolitan Square St. Louis, MO 63102			EXAMINER SMITH, JEFFREY S	
			ART UNIT	PAPER NUMBER
			2624	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/15/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/659,184

Applicant(s)

LI ET AL.

Examiner

Jeffrey S. Smith

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/03, 11/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements filed December 18, 2003 and November 17, 2005 fail to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the speckle reduction filter as described in the specification. The entire application, beginning with the title, through paragraph 28 and ending with the claims, discusses the speckle reduction filter without showing the filter in the drawings. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).
2. Figures 1-5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
3. In Figure 2, the reference number for the beamformer 12 should be included to be clear and consistent with paragraph 22.
4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following claimed

elements must be shown or the feature(s) canceled from the claim(s). No new matter should be entered:

The method steps of claims 5-14 are not shown in the drawings.

In claims 21-25, the claimed configuration of the ultrasound imaging system is not shown in the drawings. For example, in claim 21, the scan converter and display controller is configured to receive a processed data stream from the processor; divide the processed data stream into data subsets; simultaneously filter the data subsets by using a speckle reduction filter to produce filtered data subsets; and produce an image data stream based on the filtered data subsets, but this configuration of the scan converter and display controller is not shown in the drawings.

Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The abstract of the disclosure is objected to because the first sentence is grammatically incorrect, "are described" should be "is described." Correction is required. See MPEP § 608.01(b).

6. The disclosure is objected to because of the following informalities.

In paragraph 21, "the PDI mode" should be changed to "a power Doppler imaging (PDI) mode."

In paragraph 22, "transducer array 20" should be "transducer array 34."

In paragraph 23, "In yet another embodiment" should read "In yet another embodiment as shown in FIG. 5."

In paragraph 24, the inventor's name and the date of issue should be included with the patent number.

In paragraph 28, the speckle reduction filter is implemented between the detector and the SCDC, but in paragraph 30 and in the claims, the speckle reduction filter is implemented by the SCDC shown in fig. 6. The location of the speckle reduction filter in the specification and drawings should be consistent with the location of the speckle reduction filter in the claims.

In claim 31, the words for SIMD should be used before the acronym.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 24 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claim recites a single processor that simultaneously processes data subsets. One of ordinary skill in this art at the time of invention is unable to perform simultaneous processing with one processor.

Claim Rejections - 35 USC § 101

8. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 15-19 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 15-19 recite a computer readable medium encoded with a program configured to perform a process. A medium encoded with a computer program is not configured to do anything unless the computer program is read from the medium and executed by a computer processor. These claims should recite a "computer readable medium storing a computer program which, when executed by a processor, causes the processor to perform a method comprising...."

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2624

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 2, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 5,619,998 issued to Abdel-Malek et al. ("Abdel-Malek") in view of U.S. Patent Number 6,879,729 issued to Kamath et al. ("Kamath").

For claim 1, Figure 2 of Abdel-Malek discloses receiving a processed data stream from a processor (data signal 30 from the receiver is processed from an analog to a digital data stream), dividing the processed data stream into data subsets (subinterval divide 32), filtering the data subsets by using a speckle reduction filter to produce filtered data subsets (threshold processor 38), and producing an image data stream based on the filtered data subsets (scan converter 22).

Abdel-Malek does not disclose simultaneously filtering the data subsets.

Figure 7 of Kamath discloses dividing the processed data stream into data subsets (step 72 partitioning data into regions and distributing regions onto processors) and simultaneously filtering the data subsets (step 75 thresholding wavelet coefficients of transformed data).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the simultaneous filter of Kamath with the speckle noise filter of Abdel-Malek because Kamath provides the motivation at column 5 lines 3-7 of performing "a substantial amount of processing on very large data sets," which can occur when "the data is in the form of images."

For claim 2, Abdel-Malek discloses displaying the image data stream as a filtered image on a screen (element 18 display system).

For claim 9, Abdel-Malek discloses the filtering step is based on adjustable parameters, the method further comprising: automatically, without user intervention, optimizing the parameters based on an application and a scan of an imaging system (see column 6, the thresholding factors are selected by automatic or manual control. Each factor (parameter) is selected (optimized) based on the input image data (scan) and the wavelet level (application of the imaging system) to perform the filtering).

For claim 11, Abdel-Malek discloses combining the data subsets to form a filtered image data stream; and eliminating a portion of the common data present in any two of the data subsets while combining the data subsets to form the filtered image data stream (elements 42 and 22).

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Malek and Kamath as applied to claim 1 above; and further in view of U.S. Patent Number 5,954,653 issued to Hatfield et al. ("Hatfield").

For claim 3, Abdel-Malek and Kamath do not disclose increasing a range over which values of data included in the image data stream are distributed to improve contrast of a filtered image generated from the image data stream.

Hatfield discloses increasing a range over which values of data included in the image data stream are distributed to improve contrast of a filtered image generated from the image data stream (entire application beginning with the title).

It would have been obvious to one of ordinary skill in this art at the time of invention to include the enhanced contrast method of Hatfield with the ultrasound speckle reduction filter of Abdel-Malek and Kamath, for the benefit of being able to achieve the best image quality when performing three-dimensional reconstruction of ultrasound images, as taught by Hatfield in column 2 lines 50-54.

12. Claims 4, 6-8, 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Malek and Kamath as applied to claim 1 above, and further in view of U.S. Patent Number 6,674,879 issued to Weisman et al. ("Weisman").

For claim 4, Abdel-Malek and Kamath do not disclose simultaneously co-displaying a filtered image and an original unfiltered image on a common screen, wherein the filtered image is generated from the image data stream and the original unfiltered image is generated from the processed data stream.

Weisman discloses simultaneously co-displaying a filtered image and an original unfiltered image on a common screen, wherein the filtered image is generated from the image data stream and the original unfiltered image is generated from the processed data stream (see fig. 5).

It would have been obvious to one of ordinary skill in this art at the time of the invention to include the simultaneous co-display of the filtered and unfiltered image with the speckle reduction filter of Abdel-Malek and Kamath for the benefit of providing report generation that improves the analysis of an ultrasound image as taught by Weisman in the abstract.

For claim 6, Weisman discloses changing values of the parameters between first and second value sets to form a first and second image data streams; and simultaneously co-displaying a first image and a second image on a common screen, wherein the first image is generated from the first image data stream, and wherein the second image is generated from the second image data stream (see the filter and enhance buttons in figs. 5 and 7 and see col. 13 lines 2-4).

For claim 7, Weisman discloses simultaneously co-displaying, in a dual display mode, a filtered image and an original unfiltered image on a common screen, wherein the filtered and the original unfiltered images are reconstructed from a data set that includes the image data stream and the processed data stream; and enabling a user to enter the dual display mode during one of a scan, a replay of pre-recorded cine loops, and a display of a still image that is not updated periodically (see column 6 lines 54-67).

For claim 8, Weisman discloses providing a set of controls to a user to adjust the parameters of the speckle reduction filter (see the filter and enhance buttons in figs. 5 and 7 and see col. 13 lines 2-4).

For claim 10, Weisman discloses enabling a user to adjust the parameters during one of a scan, a replay of recorded scans, and a display of a still image (see the filter and enhance buttons in figs. 5 and 7 and see col. 13 lines 2-4).

For claim 13, Weisman discloses using the method in conjunction with a computer-aided diagnosis (CAD) algorithm (see the entire application beginning with the abstract).

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Malek and Kamath as applied to claim 1 above, and further in view of U.S. Patent Number 5,908,391 issued to Muzilla et al. ("Muzilla")

Abdel-Malek and Kamath do not disclose using frame averaging in conjunction with the method.

Muzilla discloses using frame averaging.

It would have been obvious to one of ordinary skill in this art at the time of the invention to include frame averaging with the speckle reduction filter of Abdel-Malek and Kamath for the benefit of blending together the in-focus data from each of the acoustic frames before the data is displayed as taught by Muzilla in the abstract.

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Malek and Kamath as applied to claim 1 above, and further in view of U.S. Patent Number 6,517,486 issued to Li ("Li").

Li discloses performing one of frequency compounding and spatial compounding of beams that are a combination of echo signals before receiving the processed data stream (title).

It would have been obvious to one of ordinary skill in this art at the time of the invention to include compounding with the speckle reduction filter of Abdel-Malek and Kamath for the benefit of reducing speckle noise as taught by Li in the abstract.

15. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Number 10/081,542 by Grunwald et al., published January 16, 2003 ("Grunwald") in view of Abdel-Malek and further in view of Kamath.

Grunwald discloses receiving beams from a beamformer (110 as shown in fig. 1); frequency compounding the beams to obtain a filtered image data stream (732 as shown in fig. 7); producing a second image data stream based on the filtered data (see flash suppression modes 834 and 932 of figs. 8 and 9, see also filter modes 1026 and 1120 of figs. 10 and 11); and simultaneously co-displaying a filtered image and a second image on a common screen, wherein the filtered image is generated from the filtered image data stream and the second image is generated from the second image data stream (see fig. 35, image area 3504 and image area 3508, the "screen can be tiled to view two image areas simultaneously," so when one image is frequency compounded, and another is filtered, the compounded and filtered images can be viewed at the same time).

Grunwald does not disclose receiving a processed data stream from a processor; dividing the processed data stream into data subsets; simultaneously filtering the data subsets by using a speckle reduction filter to produce filtered data subsets;

Figure 2 of Abdel-Malek discloses receiving a processed data stream from a processor (data signal 30 from the receiver is processed from an analog to a digital data stream), dividing the processed data stream into data subsets (subinterval divide 32), filtering the data subsets by using a speckle reduction filter to produce filtered data

subsets (threshold processor 38), and producing an image data stream based on the filtered data subsets (scan converter 22).

It would have been obvious to one of ordinary skill in this art at the time of invention to use the speckle noise filter of Abdel-Malek as one of the flash suppression modes or filter modes of Grunwald for the benefit of enhancing the resultant image by improving the signal to noise ratio. The filter of Abdel-Malek can be added to existing ultrasound equipment, as taught by Abdel-Malek at column 2 lines 25-34.

Abdel-Malek does not disclose simultaneously filtering the data subsets.

Figure 7 of Kamath discloses dividing the processed data stream into data subsets (step 72 partitioning data into regions and distributing regions onto processors) and simultaneously filtering the data subsets (step 75 thresholding wavelet coefficients of transformed data).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the simultaneous filter of Kamath with the speckle noise filter of Abdel-Malek because Kamath provides the motivation at column 5 lines 3-7 of performing "a substantial amount of processing on very large data sets," which can occur when "the data is in the form of images."

16. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Malek in view of Kamath.

Figure 2 of Abdel-Malek discloses receiving a processed data stream from a processor (data signal 30 from the receiver is processed from an analog to a digital data

stream), dividing the processed data stream into data subsets (subinterval divide 32), filtering the data subsets by using a speckle reduction filter to produce filtered data subsets (threshold processor 38), and producing an image data stream based on the filtered data subsets (scan converter 22).

Abdel-Malek does not disclose simultaneously filtering the data subsets.

Figure 7 of Kamath discloses dividing the processed data stream into data subsets (step 72 partitioning data into regions and distributing regions onto processors) and simultaneously filtering the data subsets (step 75 thresholding wavelet coefficients of transformed data). Kamath also discloses a computer readable medium encoded with a program configured to perform the process (see column 5 lines 8-23 for example).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the simultaneous filter of Kamath with the speckle noise filter of Abdel-Malek because Kamath provides the motivation at column 5 lines 3-7 of performing "a substantial amount of processing on very large data sets," which can occur when "the data is in the form of images."

For claim 16, Abdel-Malek discloses instructing a display device to display the image data stream as a filtered image on a screen.

17. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Malek and Kamath as applied to claim 15 above, and further in view of Hatfield.

For claim 17, Abdel-Malek and Kamath do not disclose increasing a range over which values of data included in the image data stream are distributed to improve contrast of a filtered image generated from the image data stream.

Hatfield discloses increasing a range over which values of data included in the image data stream are distributed to improve contrast of a filtered image generated from the image data stream (entire application beginning with the title).

It would have been obvious to one of ordinary skill in this art at the time of invention to include the enhanced contrast method of Hatfield with the ultrasound speckle reduction filter of Abdel-Malek and Kamath, for the benefit of being able to achieve the best image quality when performing three-dimensional reconstruction of ultrasound images, as taught by Hatfield in column 2 lines 50-54.

18. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Malek and Kamath as applied to claim 15 above, and further in view of Weisman.

For claim 18, Abdel-Malek and Kamath do not disclose simultaneously co-displaying a filtered image and an original unfiltered image on a common screen, wherein the filtered image is generated from the image data stream and the original unfiltered image is generated from the processed data stream.

Weisman discloses simultaneously co-displaying a filtered image and an original unfiltered image on a common screen, wherein the filtered image is generated from the image data stream and the original unfiltered image is generated from the processed data stream (see fig. 5).

It would have been obvious to one of ordinary skill in this art at the time of the invention to include the simultaneous co-display of the filtered and unfiltered image with the speckle reduction filter of Abdel-Malek and Kamath for the benefit of providing report generation that improves the analysis of an ultrasound image as taught by Weisman in the abstract.

19. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Malek and Kamath as applied to claim 1 above, and further in view of Muzilla.

Abdel-Malek and Kamath do not disclose using frame averaging in conjunction with the method.

Muzilla discloses using frame averaging.

It would have been obvious to one of ordinary skill in this art at the time of the invention to include frame averaging with the speckle reduction filter of Abdel-Malek and Kamath for the benefit of blending together the in-focus data from each of the acoustic frames before the data is displayed as taught by Muzilla in the abstract.

20. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Malek in view of Kamath.

Figure 2 of Abdel-Malek discloses receiving a processed data stream from a processor (data signal 30 from the receiver is processed from an analog to a digital data stream), dividing the processed data stream into data subsets (subinterval divide 32), filtering the data subsets by using a speckle reduction filter to produce filtered data

subsets (threshold processor 38), and producing an image data stream based on the filtered data subsets (scan converter 22).

Abdel-Malek does not disclose simultaneously filtering the data subsets.

Figure 7 of Kamath discloses dividing the processed data stream into data subsets (step 72 partitioning data into regions and distributing regions onto processors) and simultaneously filtering the data subsets (step 75 thresholding wavelet coefficients of transformed data). Kamath also discloses a computer programmed to perform the process (see column 5 lines 8-23 for example).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the simultaneous filter of Kamath with the speckle noise filter of Abdel-Malek because Kamath provides the motivation at column 5 lines 3-7 of performing "a substantial amount of processing on very large data sets," which can occur when "the data is in the form of images."

21. Claims 21 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Malek in view of Kamath.

Figure 1 of Abdel-Malek discloses a transducer array 2, a beamformer (1, 8), a processor (14, 16), a scan converter (22), and a display controller (12, 18) configured to use a speckle reduction filter as shown in Figure 2.

Figure 2 of Abdel-Malek discloses receiving a processed data stream from a processor (data signal 30 from the receiver is processed from an analog to a digital data stream), dividing the processed data stream into data subsets (subinterval divide 32),

filtering the data subsets by using a speckle reduction filter to produce filtered data subsets (threshold processor 38), and producing an image data stream based on the filtered data subsets (scan converter 22).

Abdel-Malek does not disclose simultaneously filtering the data subsets.

Figure 7 of Kamath discloses dividing the processed data stream into data subsets (step 72 partitioning data into regions and distributing regions onto processors) and simultaneously filtering the data subsets (step 75 thresholding wavelet coefficients of transformed data). Kamath also discloses a computer programmed to perform the process (see column 5 lines 8-23 for example).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the simultaneous filter of Kamath with the speckle noise filter of Abdel-Malek because Kamath provides the motivation at column 5 lines 3-7 of performing "a substantial amount of processing on very large data sets," which can occur when "the data is in the form of images."

For claims 23, 24, Kamath discloses a device that includes more than one central processing unit (CPU), wherein each CPU simultaneously processes a data subset of the image data stream (see fig. 3).

22. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Malek and Kamath as applied to claim 21 above, and further in view of Weisman.

For claim 22, Abdel-Malek and Kamath do not disclose simultaneously co-displaying a filtered image and an original unfiltered image on a common screen,

wherein the filtered image is generated from the image data stream and the original unfiltered image is generated from the processed data stream.

Weisman discloses simultaneously co-displaying a filtered image and an original unfiltered image on a common screen, wherein the filtered image is generated from the image data stream and the original unfiltered image is generated from the processed data stream (see fig. 5).

It would have been obvious to one of ordinary skill in this art at the time of the invention to include the simultaneous co-display of the filtered and unfiltered image with the speckle reduction filter of Abdel-Malek and Kamath for the benefit of providing report generation that improves the analysis of an ultrasound image as taught by Weisman in the abstract.

23. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Malek and Kamath as applied to claim 21 above, and further in view of Grunwald.

Grunwald discloses that the ultrasound imaging system scans in one of a fundamental mode, a harmonic mode, a color flow mode, a power Doppler imaging (PDI) mode, a contrast mode, and a B-flow mode to obtain echo signals reflected from an object under examination (see fig. 6).

It would have been obvious to one of ordinary skill in the art at the time of invention to use the different scan modes of Grunwald with the ultrasound device of Abdel-Malek and Kamath because the multiple modes allow a physician to have access

Art Unit: 2624

to a mode best suited for a given patient, thus reducing costs as taught by Grunwald at column 3 lines 15-19.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey S. Smith whose telephone number is 571 270-1235. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSS
JSS
February 6, 2007

JINGGE WU
SUPERVISOR, PATENT EXAMINER